Automatic Identification System (AIS)

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Agenda

1. AIS Background/Technology/Plans
2. AIS Elements
   - VTS Based on AIS
   - Transponder/Block Diagram
   - AIS Display Options/Screen
3. AIS Standards Status/Carriage Requirements
4. Conclusions

AIS Background

- Response to industry concerns
  - better tools for nav safety/collision avoidance
  - less costly VTS (user fee concern)
  - reduce VHF voice comms
  - "universal" - one box, not multiple boxes
- Convergence of multiple technologies
  - GPS/DGPS
  - Electronic Charting
  - Digital VHF communications
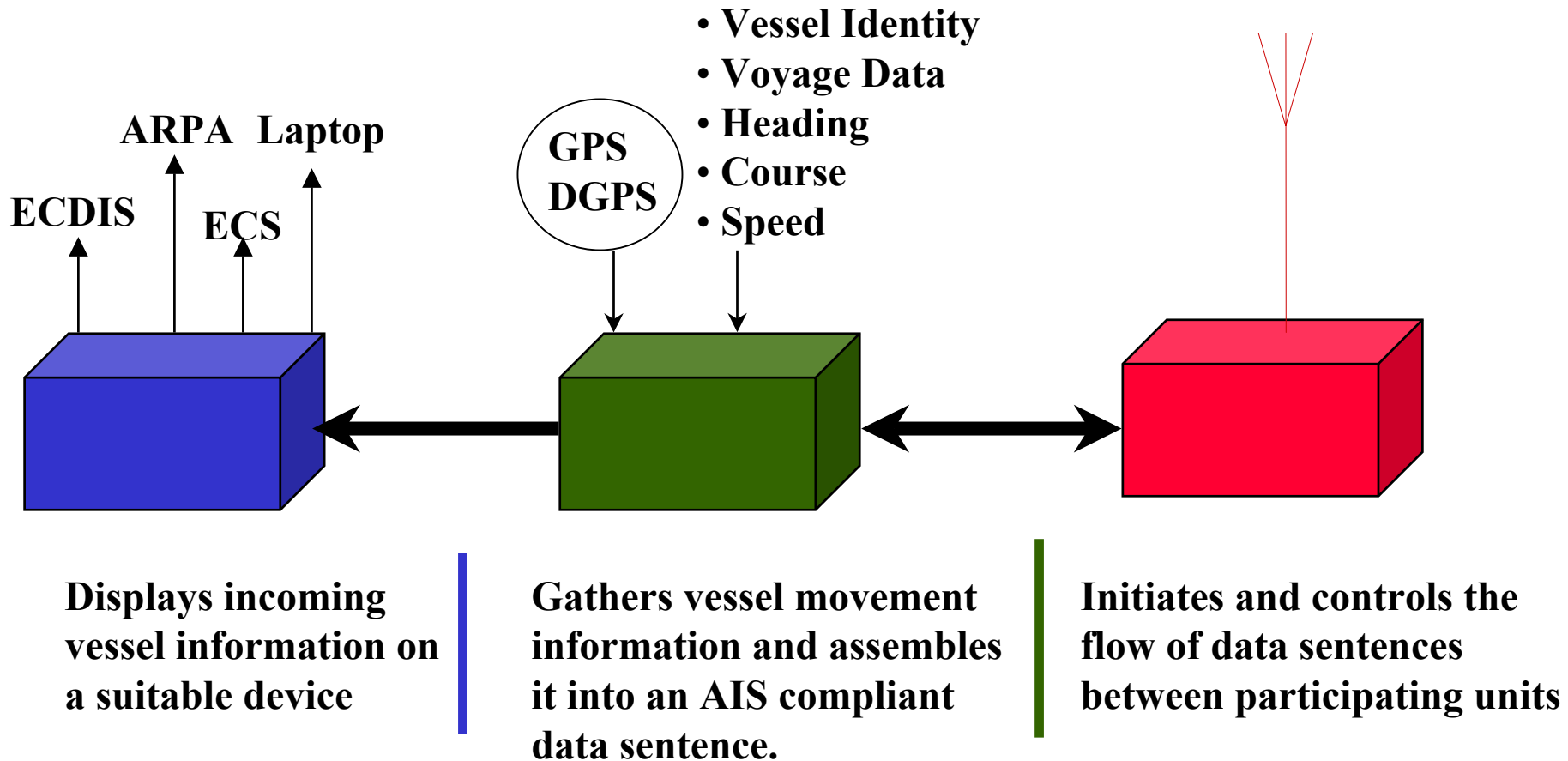
AIS Background

- Blending of multiple designs
  - several precursors
  - different operating environments
- Flexible, robust technology
  - dual VHF wireless modems - 2 channel ops
  - frequency agile
  - wide-band (25 KHz), narrow-band (12.5 KHz)
  - feeds multiple display & info processing options

AIS Elements

Display   **Assemble**   **Communicate**

ARPA Laptop

ECDIS   ECS

GPS
DGPS

- **Vessel Identity**
- **Voyage Data**
- **Heading**
- **Course**
- **Speed**

Displays incoming vessel information on a suitable device

Gathers vessel movement information and assembles it into an AIS compliant data sentence.

Initiates and controls the flow of data sentences between participating units

Vessel Traffic Service based on AIS

Vessel Data Processing System

Alerts

Position Data

Watch-stander

VTC

Radar data*

* only where appropriate

Emergency Info:
- Notices to mariners
- Weather alerts
- Distress alerts
- Traffic advisories

NOAA PORTS:
- tides
- currents
- salinity
- weather

Port Stake-holders
- Agents
- Inter-modal transportation
- Pilots' association
- Port authorities

AIS 1 (Duplex Ship-Shore)
Channel 224 A/B (for example)

- All information is available to all users in real time.
- Wide coverage network gives all users big picture.
- Broadcast messages.

A   B

A   B

AIS 2 (Simplex Ship-Ship)
Channel 228B (for example)
- Ship-Ship position reports within radio range
- Independent of VTS/VTIS.

PORTABLE AIS TRANSPONDER (Unpacked)

AIS Transponder Block Diagram

DISPLAY OPTIONS

AIS
IMO 📄 **ITU** 📄
IEC *WIP*

Remote | *or*
Integrated

**MIN DISPLAY
& HMI**

*NMEA
Interfaces*

ECDIS IMO 📄
IEC 📄*

ARPA IMO 📄
IEC 📄*

RADAR IMO 📄
IEC 📄*

ECS RTCM SC 109 Standards *WIP*

INS IMO 📄
IEC *WIP*

CONNING/ MANUEVERING DISPLAY

**Tactical
Situation
Display
(optional)**

PILOT CARRY-ABOARD
(Portable Piloting Unit)
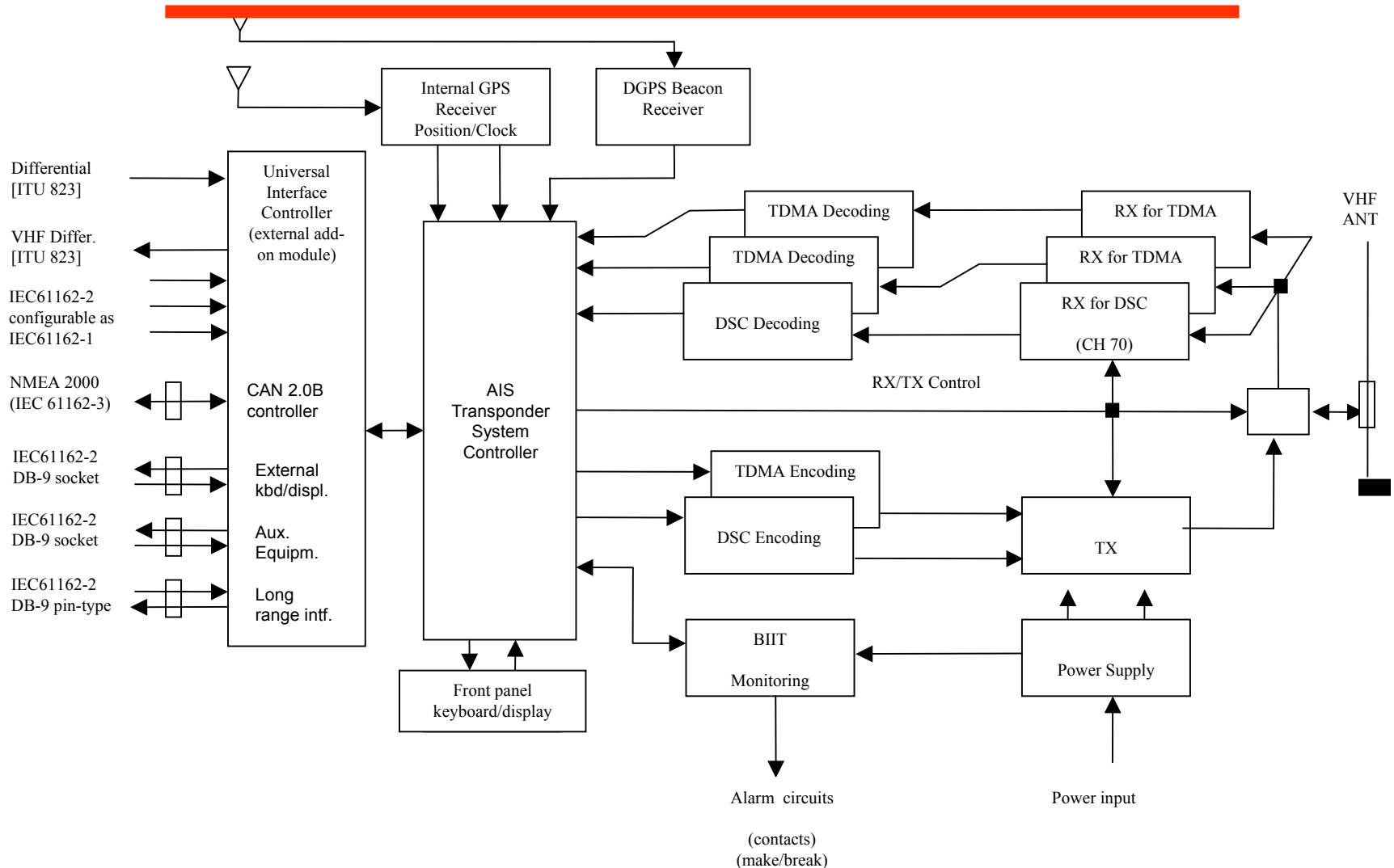
📄 = *Approved standard & spec*
* = AIS requirements TBD
WIP = Work in Progress
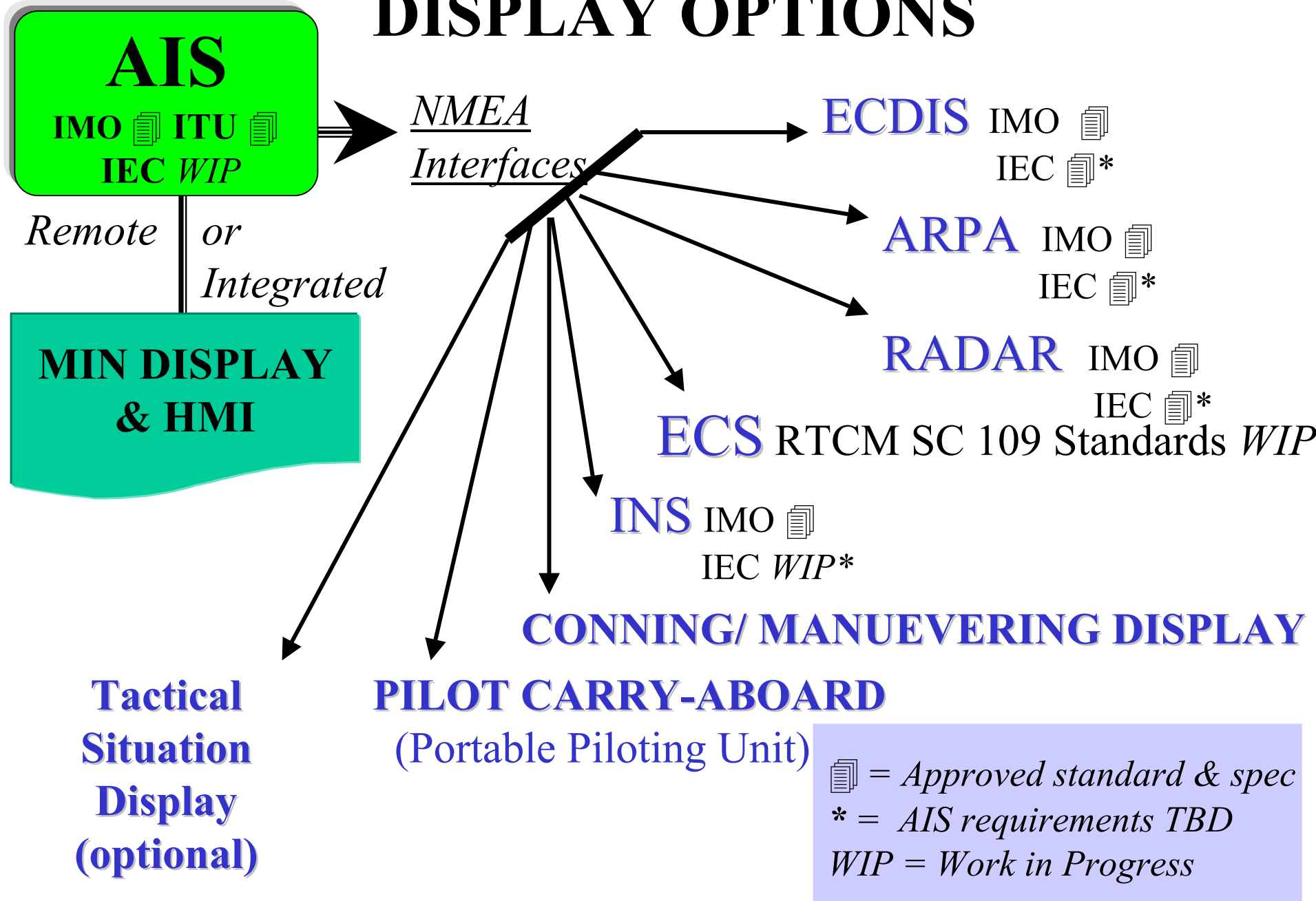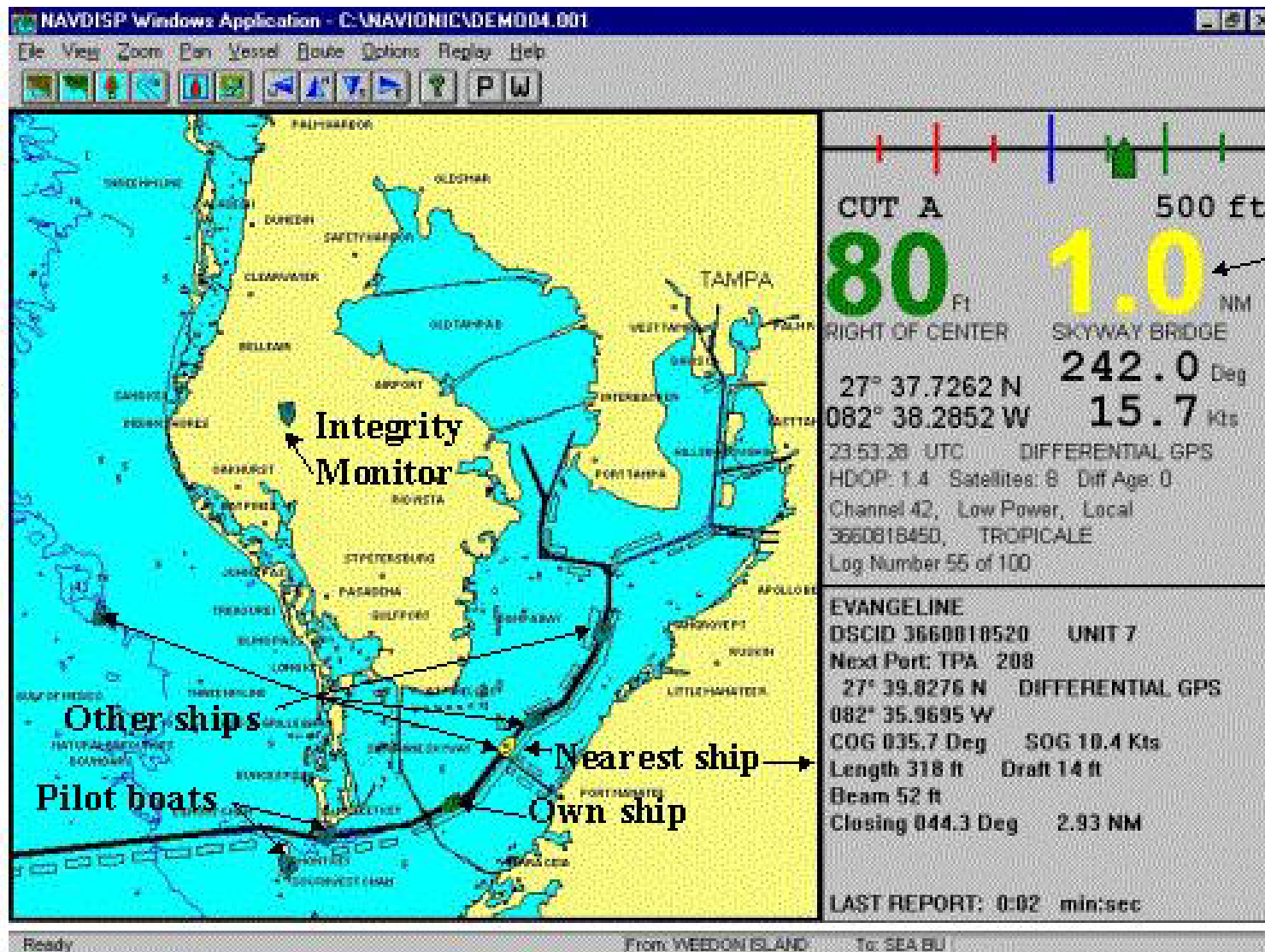
LAPTOP PC DISPLAY SCREEN
THE BIG PICTURE, SHIPS INBOUND & OUTBOUND IN THE CHANNEL

AIS Standards Status

IMO   ✓

ITU   ✓

IEC   ✓

IALA Guidelines   Draft

IMO/SOLAS AIS Carriage:

- All passenger ships, other ships of 300+ GT on Int'l voyages
- Cargo ships of 500+ GT _not_ on international voyages

- Ships constructed on or after 1 Jul 2002 - required

- Ships on Int'l voyages & built before 1 Jul 2002 - phased-in requirements:
  - * Passenger Ships & Tankers……….   by 1 Jul 2003
  - * Other than Tankers, 50K+ GT……..   by 1 Jul 2004
  - * Other than Tankers, 10K-50K GT..by 1 Jul 2005
  - * Other than Tankers, 3K-10K GT…..   by 1 Jul 2006
  - * Other than 300 - 3000 GT…………..   by 1 Jul 2007

- Ships _not_ on Int'l voyage & built before 1 July 2002:
  - ...required……………………………by 1 Jul 2008

Domestic AIS Carriage:

- Towing Vessels over 8 meters

- Small Passenger Vessels > 49 pax

- > 20/30/40? meters in length

- Fishing vessels ?

Conclusion

- AIS will enhance safety and commerce

- Technology has international support

- AIS fits well within the Information Wave